Date: 11JAN2023 1710Z
Version: Update A
Changes: Extended Fire to 24h

IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Fire at 1500 8th Street, La Salle, IL

(RFI 22-0013aU)

RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-

Request Summary

Requestor	Corey Peaslee, EPA Region 5
Contact information	312-919-4382 and 312-758-0604 Peasele.corey@epa.gov
Request	Model the ongoing fire at 1500 8th Street, La Salle, IL
Employment	Real World
Hazards	• Soot from a fire at Carus Chemical Plant
Location	La Salle, IL Coordinates: 41.337145° N/89.086494° W)
Weather	High Resolution Numerical Weather Prediction: 3 km NAM from NCEP (CONUS)
Incident Date & Time	11JAN2023 1500Z (0900 Local)
Executive Summary	• The soot from the fire is modeled to go in NW for a distance of approx. 600 meters. • Outputs are provided each 6 hours to 24 hours. • A 6 hour cumulative dosage footprint is provided on slide ~~7~~. This footprint illustrates the general area of concern, and does not necessarily indicate adverse health effects unless that person is assumed to be standing still for 6 hours.

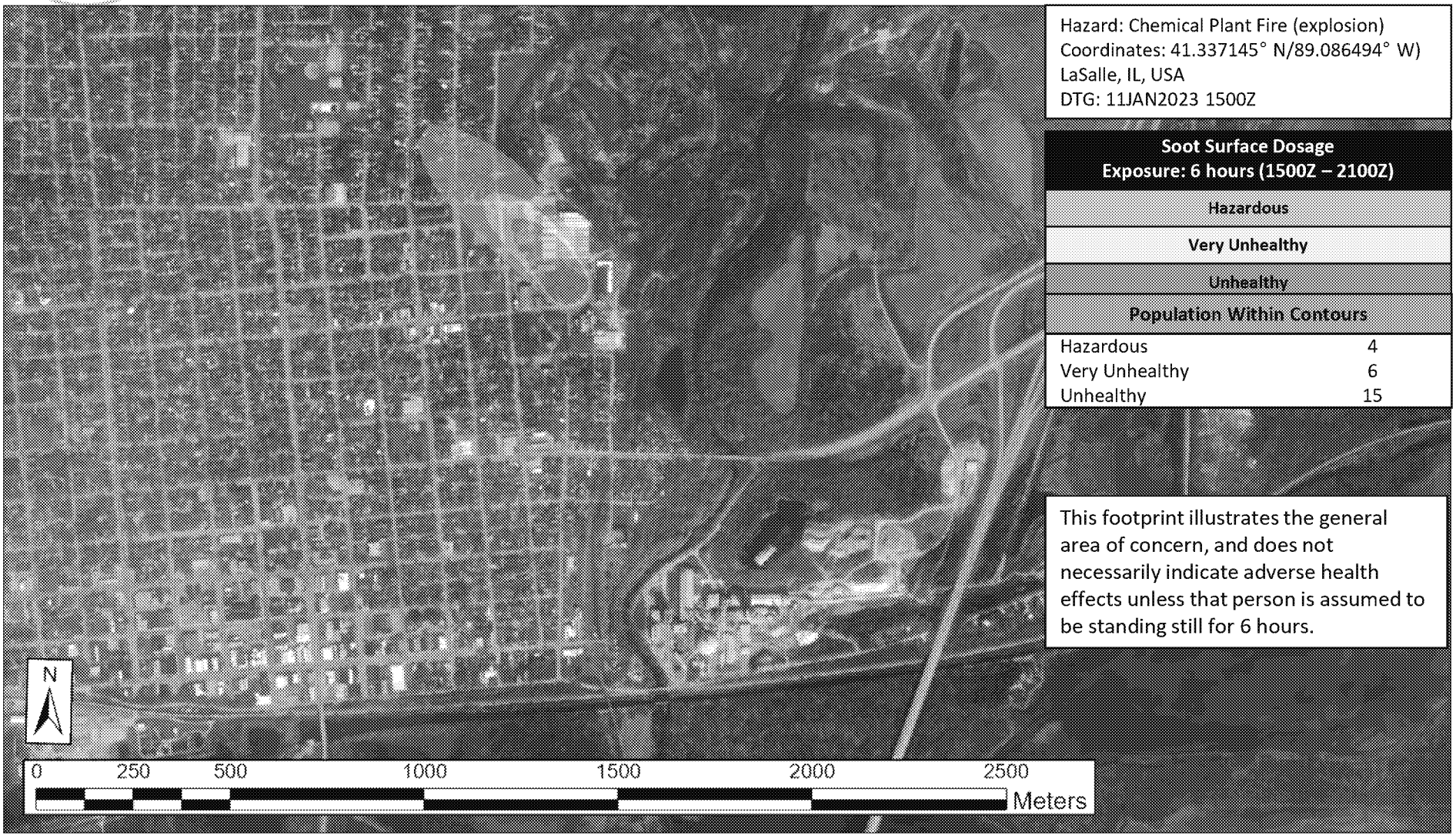
Modeling Assumptions

- Soot production from the burning material is modeled and represented in the following slides.
- Hazards from any specific chemical releases are not accounted for in this product, unless it is known a specific chemical is stored on site.
- There appears to be permanganates and possibly chlorine at the facility. The chlorine appears to be in the form of hypochlorite, which is unlikely to be a major downwind hazard (depending on quantities present). The permanganates are also unlikely to be a major airborne hazard, but could accelerate the fire.
- It is assumed the fire continues ongoing to 1500Z 12JAN.
- The area of the burn is modeled to be small fire. This will primarily affect the shape of the vertical profile.
- Modeling assumes the fire is burning at a fixed rate, beginning at 1500Z until the time shown in the plots.
- Dosage plots are shown to provide the health hazard in the area. Transmission and vertical concentration plots are provided to model the vertical profile of the visual smoke.
- Current status of the fire is unknown, but appears to have diminished compared to earlier in the day.

Wind Shifts

- Winds are currently from southerly directions (i.e., blowing from S to N)
- Winds should shift to westerly directions (blowing W to E) sometime in the 4 – 5 PM timeframe.
- Winds will shift to out of the NW about 6 PM, give or take an hour, then from due N by about midnight.
- Winds from the N should continue until mid-morning tomorrow.

Soot – Surface Dosage – 1500 CST

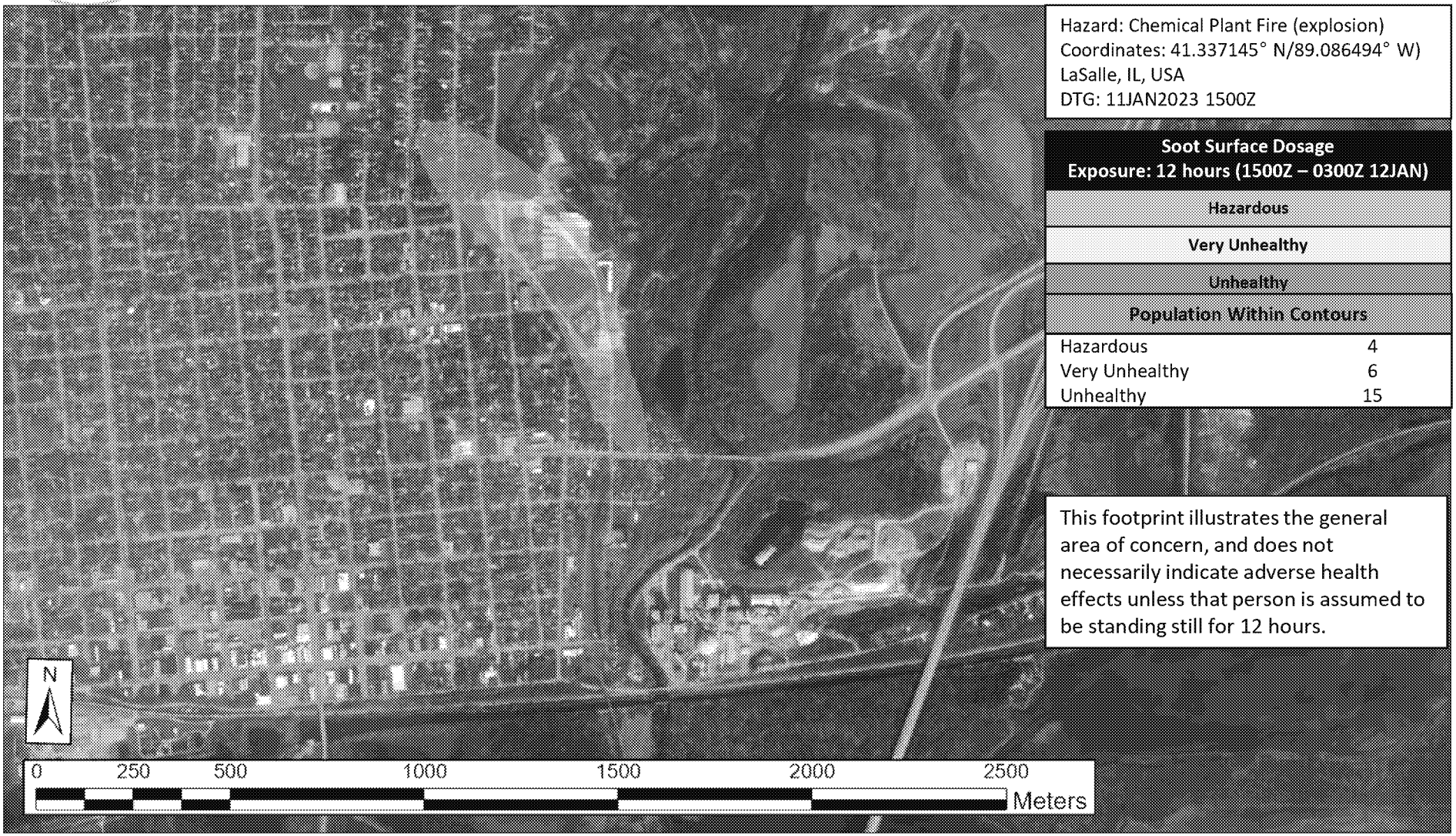


Hazard: Chemical Plant Fire (explosion)
Coordinates: 41.337145° N/89.086494° W)
LaSalle, IL, USA
DTG: 11JAN2023 1500Z

Soot Surface Dosage Exposure: 6 hours (1500Z – 2100Z)	
Hazardous	
Very Unhealthy	
Unhealthy	
Population Within Contours	
Hazardous	4
Very Unhealthy	6
Unhealthy	15

This footprint illustrates the general area of concern, and does not necessarily indicate adverse health effects unless that person is assumed to be standing still for 6 hours.

Soot – Surface Dosage – 2100 CST

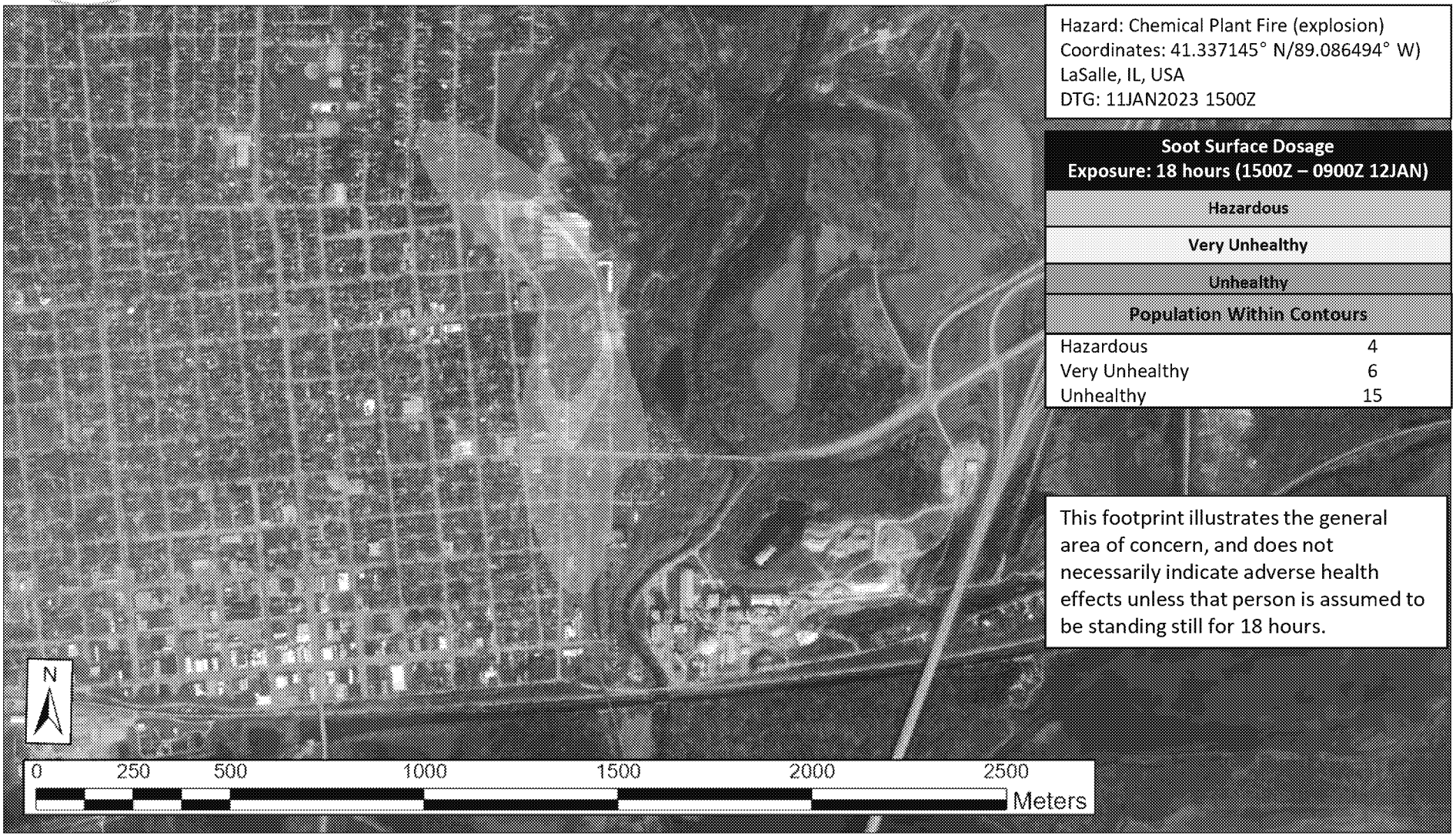


Hazard: Chemical Plant Fire (explosion)
Coordinates: 41.337145° N/89.086494° W)
LaSalle, IL, USA
DTG: 11JAN2023 1500Z

Soot Surface Dosage Exposure: 12 hours (1500Z – 0300Z 12JAN)	
Hazardous	
Very Unhealthy	
Unhealthy	
Population Within Contours	
Hazardous	4
Very Unhealthy	6
Unhealthy	15

This footprint illustrates the general area of concern, and does not necessarily indicate adverse health effects unless that person is assumed to be standing still for 12 hours.

Soot – Surface Dosage – 0300 CST 12JAN

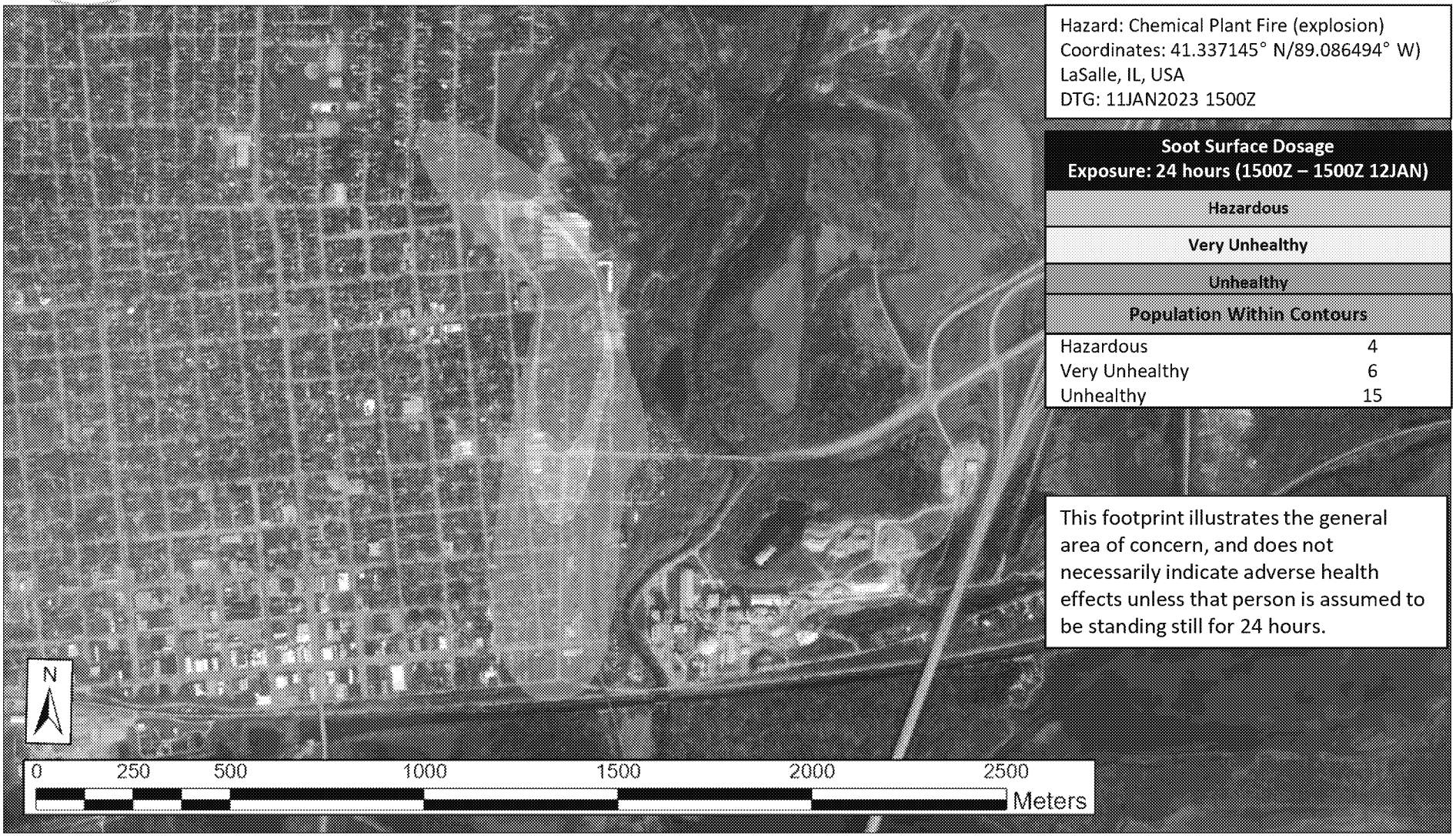


Hazard: Chemical Plant Fire (explosion)
Coordinates: 41.337145° N/89.086494° W)
LaSalle, IL, USA
DTG: 11JAN2023 1500Z

Soot Surface Dosage Exposure: 18 hours (1500Z – 0900Z 12JAN)	
Hazardous	
Very Unhealthy	
Unhealthy	
Population Within Contours	
Hazardous	4
Very Unhealthy	6
Unhealthy	15

This footprint illustrates the general area of concern, and does not necessarily indicate adverse health effects unless that person is assumed to be standing still for 18 hours.

Soot – Surface Dosage – 0900 CST 12JAN



Hazard: Chemical Plant Fire (explosion)
Coordinates: 41.337145° N/89.086494° W)
LaSalle, IL, USA
DTG: 11JAN2023 1500Z

Soot Surface Dosage Exposure: 24 hours (1500Z – 1500Z 12JAN)	
Hazardous	
Very Unhealthy	
Unhealthy	
Population Within Contours	
Hazardous	4
Very Unhealthy	6
Unhealthy	15

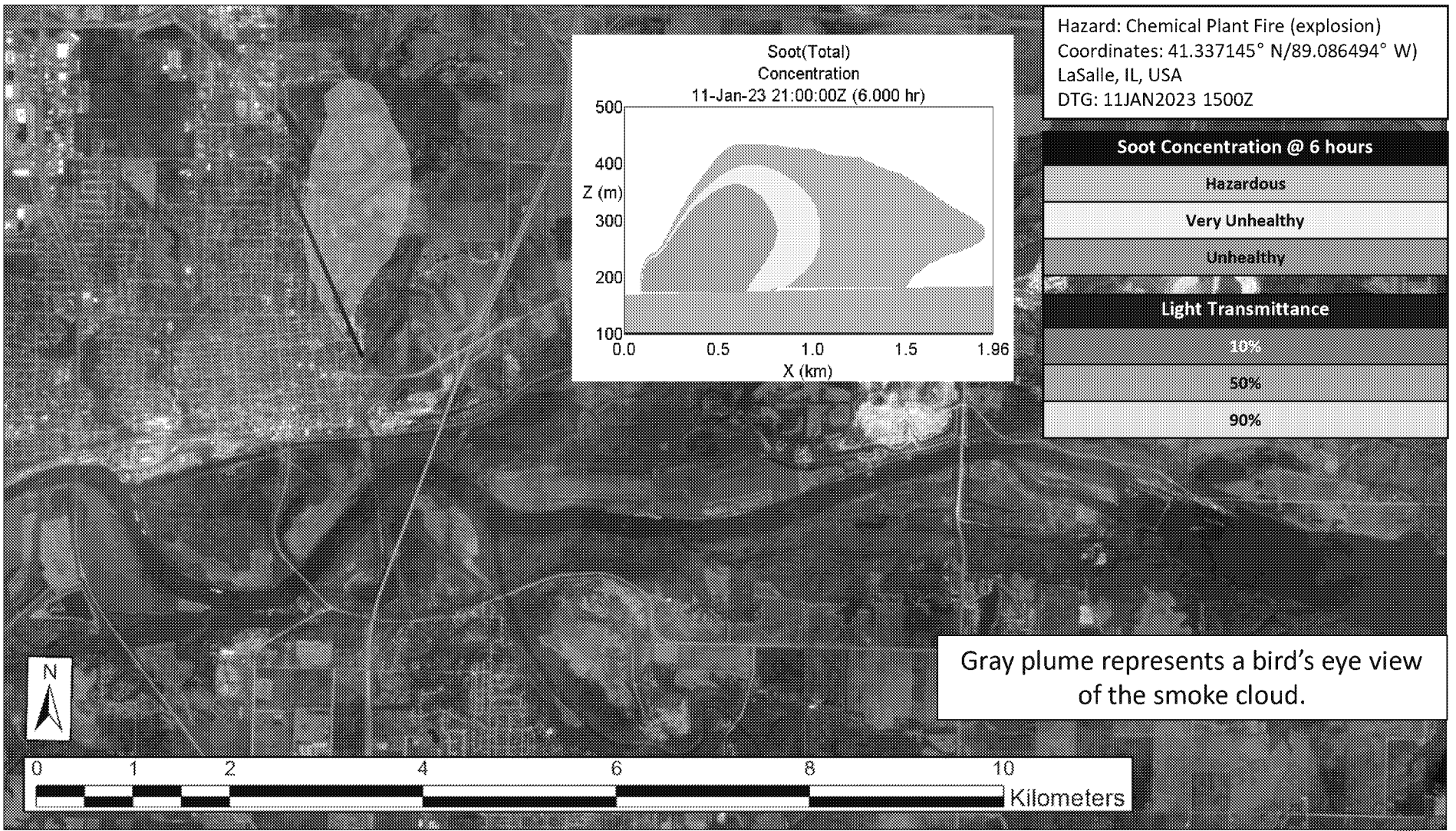
This footprint illustrates the general area of concern, and does not necessarily indicate adverse health effects unless that person is assumed to be standing still for 24 hours.

Soot – Surface Dosage

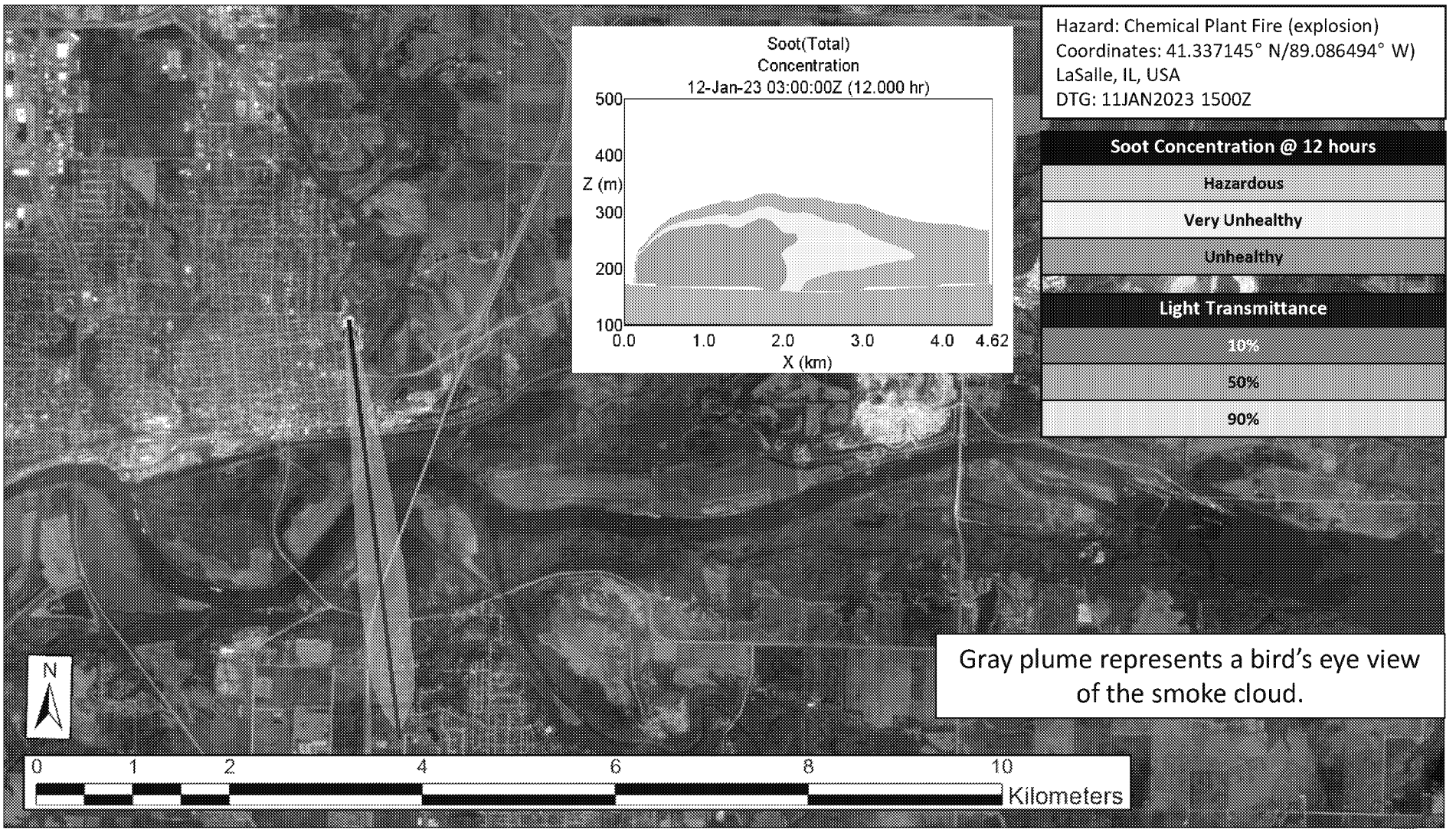
Value	Description
Hazardous	Serious aggravation of heart or lung disease and premature mortality in people with cardiopulmonary disease and older adults; serious risk of respiratory effects in general population. Everyone should avoid all physical activity
Very Unhealthy	Significant aggravation of heart or lung disease and premature mortality in people with cardiopulmonary disease and older adults; significant increase in respiratory effects in general population. People with heart or lung disease, older adults, and children should avoid all physical activity outdoors; everyone else should avoid prolonged or heavy exertion.
Unhealthy	Increased aggravation of heart or lung disease and premature mortality in people with cardiopulmonary disease and older adults; increased respiratory effects in general population. People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion; everyone else should reduce prolonged or heavy exertion.

Cumulative dosage values based on exposure to 2.5um particulate matter. Concentration values and descriptions taken from Pollutant-Specific Sub-indices and Health Effects Statements and Cautionary Statements for Guidance on the Air Quality Index tables, in Guidelines for Reporting of Daily Air Quality – Air Quality Index (AQI), USEPA, EPA-454/B-06-001, May 2006.

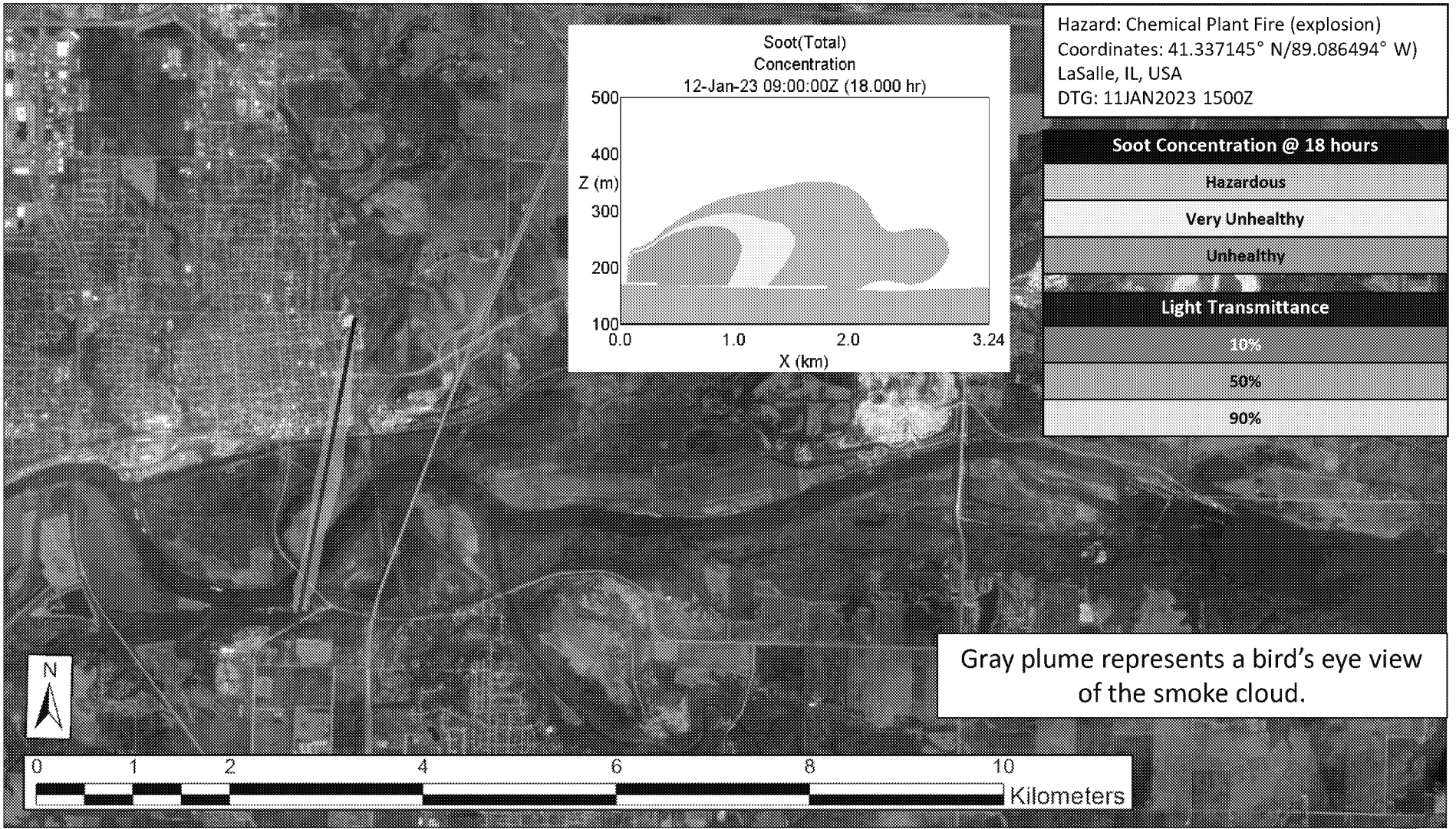
Soot – 1500 CST – Vertical Profile



Soot – 2100 CST – Vertical Profile



Soot – 0300 CST 12JAN – Vertical Profile



Soot – 0900 CST 12JAN – Vertical Profile